

ABSTRACT

The invention provides a catalytic, chemospecific and stereospecific method of oxidizing a wide variety of substrates without unwanted side reactions. Essentially, the method of the instant invention, under relatively mild reaction conditions, catalytically, stereospecifically and chemospecifically inserts oxygen into a hydrocarbon C-H bond. Oxidation (oxygen insertion) at a tertiary C-H bond to form an alcohol (and in some cases a hemiacetal) at the tertiary carbon is favored. The stereochemistry of an oxidized tertiary carbon is preserved. Ketones are formed by oxidizing a secondary C-H bond and ring-cleaved diones are formed by oxidizing cis tertiary CH bonds.